

Canberra Botanic Gardens

GROWING NATIVE PLANTS

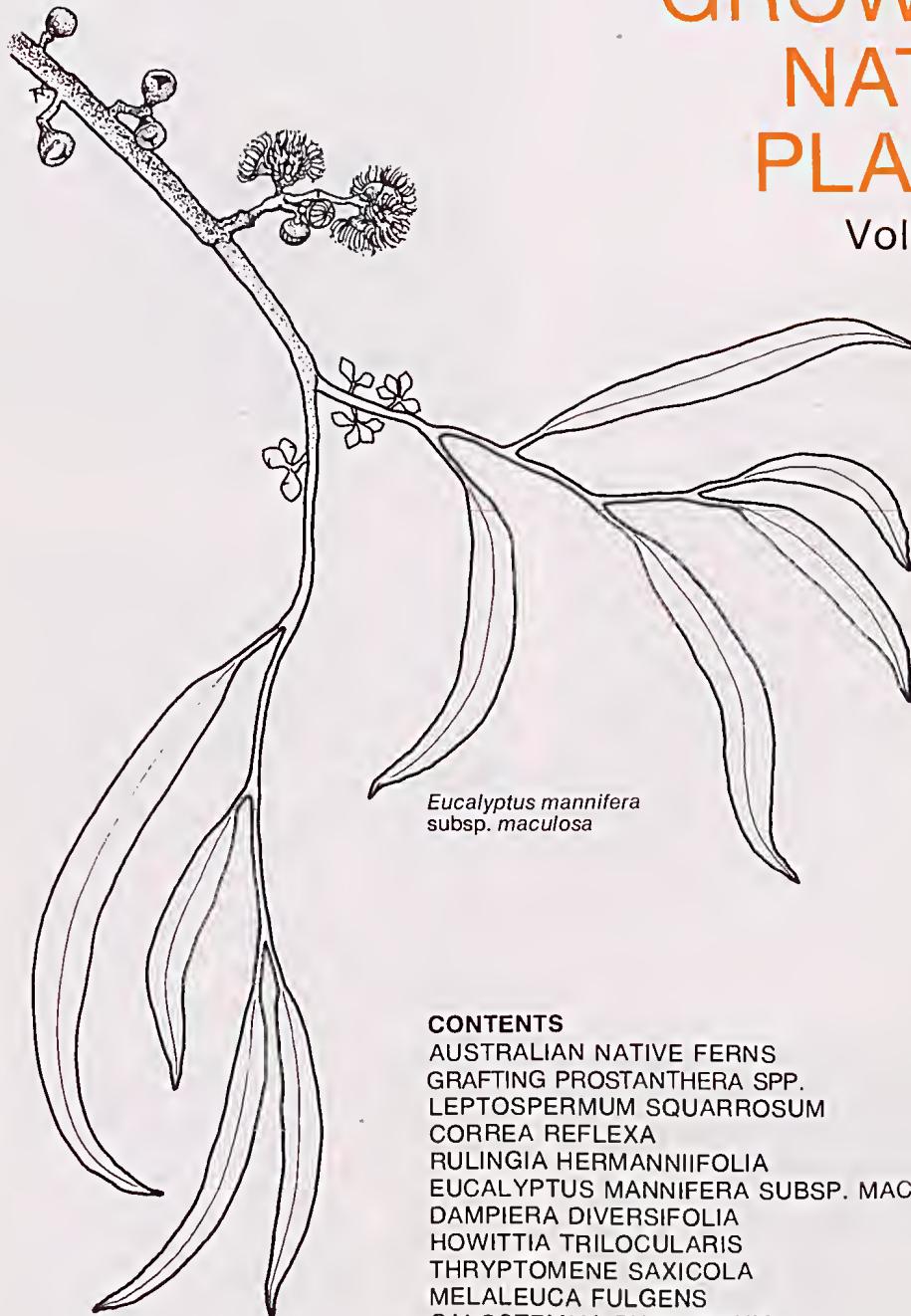
Vol. 7, 1977



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AUSTRALIAN NATIVE FERNS

Ferns are the most beautiful of non-flowering plants and for this reason alone deserve a place in the home garden. Species exist in a diverse climatic range extending from the tropics to the Arctic and Antarctic and it should not be too difficult to select suitable Australian species for all climates.

Ferns are excellent for indoor and outdoor use. Indoors, the plants can be potted in hanging baskets in the humid and moist atmosphere of a bathroom, or in any room for that matter. They look especially attractive when placed in enamelled pottery and put in a room with dim light or in the corner of a hallway.

In those awkward, wet, shaded patches of the garden they are often the only suitable plants to grow, their delicate fronds and soft greenness giving these places an air of gracefulness and tranquillity. As courtyard plants, ferns take away the harshness of concrete slabs and walls and in any case are usually well-suited to such locations in that they rarely grow too big. Ferns provide all-year-round greenery and give a pleasing

Adiantum aethiopicum



'tropical' effect even in cool climates. No garden should be without at least one or two fern specimens.

In the garden it is important to provide a good, well-drained, light soil, for example a sandy loam, because heavy clay soil will become sour from wetness and result in the death of the plant.

A good potting mix consists of the following ratios:

Half part leaf mould
Quarter part peat moss
Quarter part sand

When growing ferns inside ensure they are not placed near a draught or in direct sunlight because in these situations they will never succeed. If growing them in a heated room it is a good idea to place the pot in a small tray of water or a dish, thus keeping the humidity high around the plant.

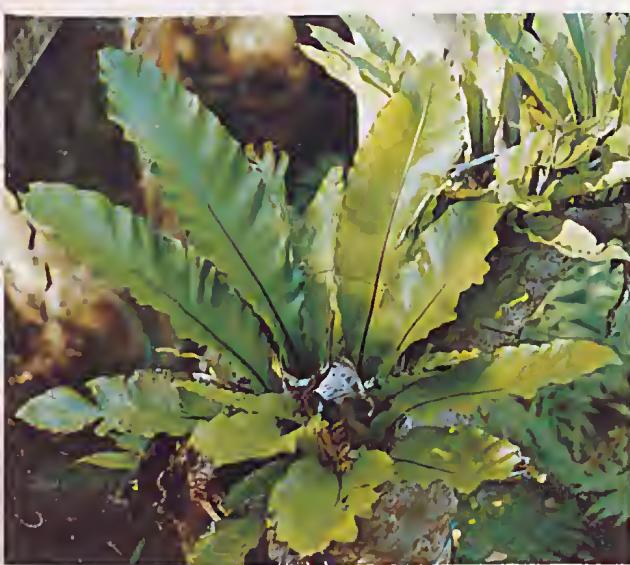
The ferns discussed in this article have proved their adaptability to a wide climatic range and are not too difficult to obtain from any good nursery.

Adiantum aethiopicum (Common Maidenhair) is one of the best-known cultivated ferns and occurs naturally in all Australian States and New Zealand as well as in several other countries. It grows in damp, open situations as well as along river banks. The fronds grow from 15–30 cm tall with wiry stems and rhizomes being reddish brown, smooth and shiny in appearance. Maidenhair makes an excellent hanging pot specimen but if it is to be grown outside in the Canberra climate, frost protection should be provided by use of overhead trees or rock shelters.

Asplenium nidus (Bird's Nest Fern) is found in Queensland and New South Wales as well as from Polynesia to India. The fronds are undivided and up to 1 m long by 10–20 cm broad with a light, rich green colour. *A. nidus* grows naturally as an epiphyte nestling in the branches of rainforest trees or on rocks. Under cultivation in the home garden it can be grown in pots and baskets, on rocks and in trees.

When growing them as epiphytes, for example in tree forks, it is necessary to mix equal parts of sphagnum moss and peat which is placed around the anchorage point. The fern must never be allowed to dry out because the newly formed epiphytic roots will shrivel and die. The fern can be either nailed or tied to a tree until its roots take hold.

The spores of *A. nidus* are seen as straight brown rows on the underside of the leaf and are collected in the same manner as for *Platycerium* sp. mentioned later in this article. Bird's Nest Ferns will grow in the Canberra



Asplenium nidus

climate if given adequate frost and sun protection.

Asplenium bulbiferum (Mother Spleenwort) is found from south-east Queensland south to Tasmania and extends west to South Australia. It grows in damp gullies and on creek banks and even perched on the trunks of tree ferns and trees. It attains a height of 1 m. This fern is attractive when grown in a large tub and in the Canberra climate it may be grown this way and placed on a sheltered verandah.

Reproductive bulbils develop on the tips of the older leaves and grow into young plants as the fronds wither and die. The best way to grow new plants of *A. bulbiferum* is to cut off the bulbils with a piece of older parent leaf attached. These are then planted in a sandy peat moss mix with the older parent leaf appendage buried under the soil and the young bulbil resting on the surface of the mix. Roots will form provided the soil is kept moist and in several weeks the plant will be ready for potting on.

Blechnum minus (Soft Water-fern) is widespread in eastern Australia from Queensland south to Tasmania and west to South Australia. It usually grows along streams and in rock crevices and depending on growing conditions will reach a height of from 15 cm to 2 m or more. *B. minus* does not really show its splendour when grown in a small pot, but if grown outdoors in a shaded sheltered position it produces beautiful luxuriant growth. The stems are thick, arising from a crown, and the young uncurling stalks are covered

in coarse reddish-brown scales. The stalk base is blackish in appearance.

Blechnum nudum (Fishbone Water-fern) occurs from tropical Queensland southwards to Tasmania and west to South Australia. This fern grows on moist forest slopes and in gullies where the thick rhizomes develop into a small trunk up to 30 cm high. The stalks are smooth, black and shiny and the leaves are arranged in the well-known fishbone appearance along the stem. *B. nudum* makes a good outdoor fern or tub specimen and is quite hardy.

Blechnum patersonii (Strap Water-fern) is found throughout eastern Australia where it grows along the banks of streams and in moist fern gullies. The fronds grow from 30-60 cm tall and are strap-like in appearance having mainly undivided leaves.

Blechnum penna-marina (Alpine Water-fern) is found in the NSW and Victorian alps as well as in the Tasmanian and New Zealand mountains but it will grow well even at much lower elevations. It grows abundantly on the banks of alpine creeks and often creeps over mossy rocks.

The stalks are leathery green and covered in minute reddish scales and hairs, the reddish appearance in young fronds being a striking asset to the plant's appearance. The fronds are commonly 5-15 cm high and 2-3 cm wide. This fern will grow in garden wall crevices and rocky pockets and is extremely hardy in cold climates.

Culcita dubia (Common Ground Fern) is widespread in eastern Australia, occurring from north Queensland down to Tasmania. Fronds are pale yellowish-green, 150 cm in length, with straw-coloured stems arising from a creeping rhizome. The fern grows abundantly on forested hill slopes and along gullies and usually occurs along with the common Bracken Fern (*Pteridium esculentum*) and Gristle Fern (*Blechnum cartilagineum*). It is quite hardy and its light colour is an interesting addition when grown alongside other darker green ferns.

Cyathea australis (Rough Tree Fern) occurs from south-east Queensland south to Tasmania along the eastern seaboard. The trunk, unlike the *Dicksonia* sp. is slender, growing to 25 cm in thickness and 10 m tall. The rough, rasp-like frond butts persisting towards the top of the trunk give this fern its common name. As with all *Cyathea* sp., *C. australis* is less frost hardy than the *Dicksonia* mentioned below although it will grow in Canberra if given the protection of overhead evergreen trees or perhaps a house eave.

Cyathea cooperi (Coin Spotted Tree Fern) inhabits mountain rainforests in eastern Australia and extends from Cooktown, north Queensland, to Wollongong in the south of NSW. A naturalised colony occurs near Bedfordale, south-east of Perth, WA. The trunk grows to a height of 10 m having a diameter of 15 cm. The old leaf fronds are shed cleanly leaving oval leaf scars covering the trunk, hence its common name of Coin Spotted Tree Fern. *C. cooperi* is much less frost hardy than *C. australis* and will not grow well at all in Canberra unless thorough protection is provided.

Dicksonia antarctica (Soft Tree Fern) is well known, being distributed from south-east Queensland south to Tasmania along the eastern seaboard. The trunk can grow up to 10 m tall and 1.5 m thick and occasionally branched trunks bearing several crowns of frond growth are found. Trunks are covered in soft, reddish-brown hair and the fibrous roots are especially dense at the base of the trunk, adding to the fern's massiveness. As many as thirty new fronds are produced during the growing season and rapid frond growth is especially noticeable after periods of steady rainfall during warmer months.

In the fern's native habitat the short-eared brushtail possum feeds on the tender uncurling young fronds and in earlier days the Aborigines also realised the food value in the starchy pith at the apex of the trunk.

To grow *Dicksonia* sp. well, the soil should not be too clayey and sticky, otherwise failure will result. If the soil is heavy, it is advisable to raise the garden bed and incorporate leaf mould, sand and peat moss to ensure proper drainage and aeration. During warm weather the trunk should be given a liberal watering twice daily and kept moist at other times.

Dicksonia sp. is commonly propagated by immersing the base of a sawn-off trunk in a light sandy medium. Many nurseries remove ferns by licence from State forests during logging operations and sell them this way. The trunks will grow new roots from the cut in several weeks and new frond growth will begin, provided regular overhead watering is carried out.

Doodia media (Common Rasp-fern) is common in the south-eastern States and extends north into Queensland. It is also found in New Zealand. The fern grows in exposed situations on forest slopes and along gullies. Fronds arise from the crown of a short thick rhizome and grow from 15 cm to over 60 cm high. The young fronds are attractive because of their rosy red appearance and combine well with the dull black stalks of older fronds. This fern thrives in the Canberra climate.





Top left: *Cyathea australis*

Top right: *Dicksonia antarctica*

Bottom: *Platycerium bifurcatum*

Marsilea drummondii (Common Nardoo) is abundant over most of inland Australia but is not found in Tasmania. It grows in claypans in arid areas, growing from underground runners when these depressions fill with water during rain. When the claypans dry up the plants grow for a while in the remaining mud until dryness causes the fronds to wither and the spore capsules are released. Aborigines ground the capsules into a paste with water until an edible cake was formed.

The appearance of the leaf is similar to a four-leaf clover with leaflets growing up to 3 cm long and 3 cm broad. The capsules are large and densely hairy on erect stalks of various lengths. This fern ground cover is attractive in the garden in moist, shaded or sunny positions and although severe frosts hit it hard, it still comes back fresh in the spring. Nardoo grows well in bog gardens or in the muddy bottoms of shallow streams where the leaves float attractively on the water surface similar to a water lily.

Platycerium bifurcatum (Elkhorn Fern) is one of the most beautiful and extraordinary of ferns. It occurs naturally on rocks and trees, frequently encircling branches to form

a massive clump 2 m across. The barren fronds of *P. bifurcatum* are rounded or convex while fertile fronds are pendulous and up to 1 m long. This fern is made up of numerous individual plantlets which cling together creating the appearance of a single plant. They grow well when nailed to a tree with sphagnum moss and peat in equal parts pushed in between the back of the fern and the trunk of the tree. The same applies if nailing the fern to a board or hanging it in a wire-framed basket. It likes strong but not direct sunlight and during summer can be soaked liberally with water twice a day. It should be kept moist at other times so that the foliage does not become droopy from dryness.

The spores (reproductive bodies) are distinguished as brown patch marks on the under-side of the pendant fronds, and are ready for harvest when they are dark brown in colour. At this stage they may be scraped off the fronds and stored in a brown paper bag in a cool, dark place until ready to sow. *P. bifurcatum* grows satisfactorily in the Canberra climate if overhead shelter such as the foliage of a eucalypt is provided.

Platycerium superbum formerly *P. grande* (Staghorn Fern) does not grow well in the Canberra climate and it would be wiser to choose *P. bifurcatum* if you need an epiphyte in the garden.

The fertile fronds of *P. superbum* are 1-2 m long and pendant in pairs with staghorn-like divisions. The spores are seen as large brown patches formed on the under-surface of the fronds and should be collected in the same way as *P. bifurcatum* spores. To control leaf damage by pumpkin beetle, spray with Malathion (the damage is seen as small holes on the leaf surface). The same growing conditions apply to this fern as to *P. bifurcatum*.

Polystichum proliferum (Mother Shield Fern) is widespread, ranging from south-east Queensland to Tasmania and west to South Australia. It is a common bushland fern and grows in gullies and on mountain slopes in sub-alpine places. Fronds grow to over 1 m high and are a narrow triangular shape. Reproductive bulbils form on the tip of the mature fronds and can be propagated in the same way as *Asplenium bulbiferum*. The fern is frost hardy.

Todea barbara (Austral King-fern) extends from Queensland to Tasmania and west to South Australia as well as being distributed in New Zealand and South Africa. The butt or trunk is short but thick and up to 3 m tall with fibrous roots. It often bears several crowns of fronds up to 3 m long.

Although it grows to a large size, Austral

King-fern is also found as a small plant in rock crevices around the faces of waterfalls. It grows to a large size on open creek banks and if grown in cultivation appreciates damp, well-drained soil and does well in a large tub. Good specimens are growing in Canberra Botanic Gardens rainforest.

Propagation of ferns by spores

The propagation of ferns from spores at Canberra Botanic Gardens has been carried out successfully in the laboratory by using a sterile culture method. This involves growing the plants in the entire absence of all other organisms; all matters such as nutrition and environment are controlled.

Many fern species are readily germinated from spores by other non-sterile means. Methods used here have involved sowing the spores on treefern bark, water-saturated house bricks, or on peat moss combined with sand in equal proportions.

Another good medium consists of two parts loam, two parts sand and one part peat moss. This mix is steam sterilised at 60°C for thirty minutes. Light and humidity are important in fern germination although direct sunlight is detrimental.

A simple propagation box may be constructed by covering a box-like frame with polythene. A lid made from polythene with a

wooden frame should fit firmly over the box. Peat moss or coarse sand should be placed inside the box to a depth of about 10 cm and the pots or trays containing the medium and spores are placed on this. A fluorescent light fitted overhead will quicken the rate of germination.

Another method is to fit each pot with a plastic covering. Water should be applied in a very fine spray and the medium should be kept damp but not soggy.

After germination, when strong prothalli have developed, these should be transplanted on to a medium consisting of three parts sieved peat, two parts washed river sand and one part ash.

When healthy fronds develop, the ferns can be repotted into a mix consisting of peat, sand, vermiculite and ash to which a little calcium carbonate and superphosphate have been added.

Plants should be kept in the propagation box until the fronds are about 10-12 cm high, then gradually hardened off before removing by propping open the lid of the box for a little while each day. Ferns respond well to an application of a soluble fertilizer, such as Aquasol at half strength, at each watering throughout their entire development.

Potted ferns also respond well to applications of fish emulsion as directed on the label.

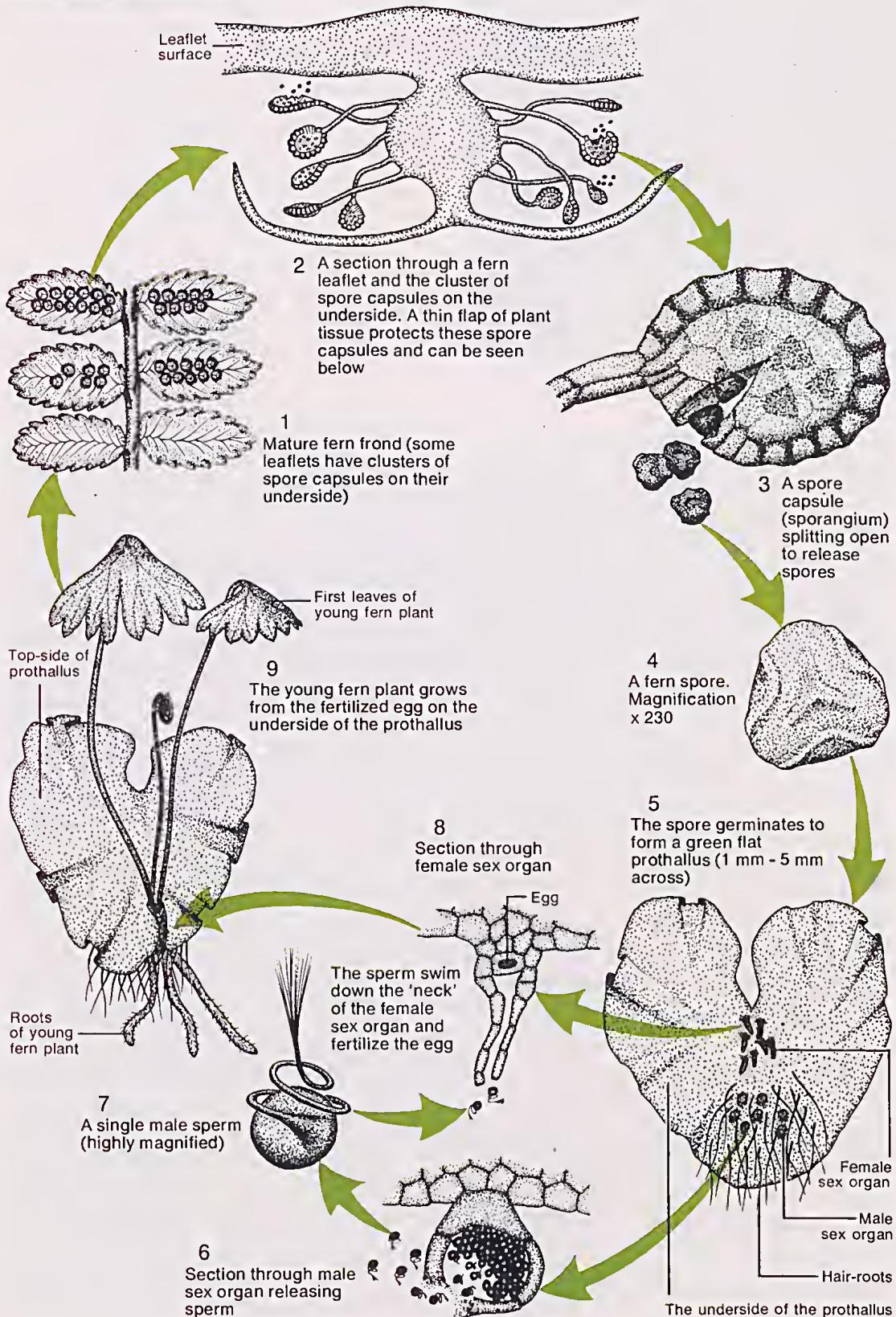
Todea barbara showing spores



Platycerium superbum prothallus in agar



The life-cycle of the fern





Platycerium superbum

Name meanings

Adiantum aethiopicum: *Adiantum* — from the Greek, *adiantos*, meaning unwetted, referring to the water-resisting property of the fern originally given this name; *aethiopicum* — neuter of *aethiopicus*, an epithet pertaining to Ethiopia.

Asplenium nidus: *Asplenium* — a Latin compound, *a*, meaning from, and *splen*, meaning spleen, plus *-ium*, a suffix meaning characteristic of, referring to the supposed medicinal properties of the original spleenwort; *nidus* — from the Latin, *nidus*, a bird's nest.

Asplenium bulbiferum: *bulbiferum* — a botanical Latin adjective meaning bulb bearing, referring to the bulbils borne on the fronds.

Blechnum minus: *Blechnum* — derived from *blech-non*, a Greek name for fern; *minus* — neuter of the Latin adjective *minor*, meaning lesser or smaller.

Blechnum nudum: *nudum* — from the Latin adjective *nudus*, meaning naked; Labillardière, an early botanist, in his original description of this taxon refers to the nude indusia (coverings of sori or spore masses).

Blechnum patersonii: *patersonii* — named after William Paterson, a Scottish botanist who collected in eastern Australia for Sir Joseph Banks.

Blechnum penna-marina: *penna-marina* — from the Latin noun *penna*, meaning feather, and *marinus*, meaning of the sea; possibly the species was considered to resemble a sea anemone which is known in the vernacular as Sea Feather.

Culcita dubia: *Culcita* — a Latin noun meaning matress or cushion (a fern species of this genus was apparently used as bedding material); *dubia* — feminine form of the Latin adjective *dubius* meaning doubtful or uncertain (the reason for the use of this name is obscure).

Cyathea australis: *Cyathea* — from the Greek, *kyatheion*, meaning a little cup, alluding to the indusium being cupshaped; *australis* — a Latin adjective meaning south or southern, probably

chosen because the plant grows in the southern hemisphere, in this case in Australia.

Cyathea cooperi: *cooperi* — in honour of Sir Daniel Cooper (fl. 1864).

Dicksonia antarctica: *Dicksonia* — named in honour of James Dickson (1738-1822), an English nurseryman; *antarctica* — latinized feminine form of the Greek, *antarcticos*, meaning southern, possibly referring to its being found in Tasmania.

Doodia media: *Doodia* — in honour of Samuel Doody (1656-1706), a London apothecary and one of the earliest British cryptogamic botanists; *media* — from the Latin adjective *medius*, meaning middle or intermediate.

Marsilea drummondii: *Marsilea* — in honour of Count Luigi Fernando Marsigli (1658-1750), founder of the Academy of Science, Bologna; *drummondii* — in honour of James Drummond (1784-1863), a well-known collector of West Australian plants.

Platycerium bifurcatum: *Platycerium* — a Greek compound from the adjective *platys*, meaning broad, and the noun *keras*, meaning horn, alluding to the shape of the fronds; *bifurcatum* — from the Latin adjective *bifurcus*, meaning two-pronged or forked, referring to the fronds of this species.

Platycerium superbum: *superbum* — from the Latin adjective *superbus*, meaning magnificent, superb.

Polystichum proliferum: *Polystichum* — from the Greek, *poly*, meaning many, and *-stichos*, meaning a line or a row referring to the many rows of sori; *proliferum* — from the botanical Latin adjective *prolifer*, meaning bearing progeny, referring to the plantlets that are produced on the fronds of this species.

Todea barbara: *Todea* — in honour of Henry Julius Tode (1733-1797), a mycologist of Mecklenburg; *barbara* — from the Latin adjective *barbarus*, meaning foreign (the reason for the use of this epithet is obscure).



Polystichum proliferum

GRAFTING **PROSTANTHERA** spp.

Prostanthera ovalifolia:
Prostanthera — from the Greek prosthēke, an appendage, and anthera, an anther, alluding to the spurred connectives of the anthers; ovalifolia — having oval leaves

Interest in grafting plants of the genus *Prostanthera* was initiated following high losses in both the Botanic Gardens nursery and the open garden. These observations, begun in 1969, soon linked the root-rotting fungus *Phytophthora cinnamomi* with these deaths. Chemical control in the field was not feasible.

Studies of the genus and related genera led to *Westringia fruticosa* or Coastal Rosemary being chosen as a likely rootstock. *W. fruticosa* grows vigorously in the Gardens, is easily propagated and shows excellent resistance to *P. cinnamomi*.

The initial grafting trials showed that most species of *Prostanthera* were compatible with *W. fruticosa*. Several small-leaved species such as *P. aspalathoides* were incompatible and were successfully grafted using a nurse graft of *P. nivea*.



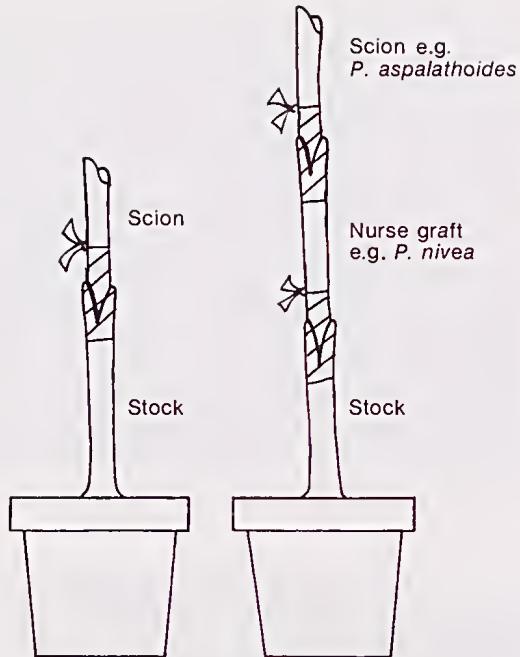


Figure 1

The *W. fruticosa* stock was struck from cuttings and grown-on in 10 cm pots. When 10 – 12 cm high these stocks were pruned to leave only one main stem. Any laterals were shortened to within 2 cm of the main stem in order to provide sustenance till the graft could produce its own food. They were then removed altogether.

The wood was prepared like a cutting. The wood used was semi-hardened tip material about 5-7 cm long with two-thirds of the leaves removed. It was ideally the same diameter as the stock.



Figure 2

Using sterilised tools, the top of the stock was removed and a 2 cm cut made vertically down the centre of the stem. The scion was prepared by paring off an equal length of wood (2 cm) from each side to make a wedge. This wedge was fitted into the vertical slit, the cambium or bark layers aligned and the graft bound and sealed.

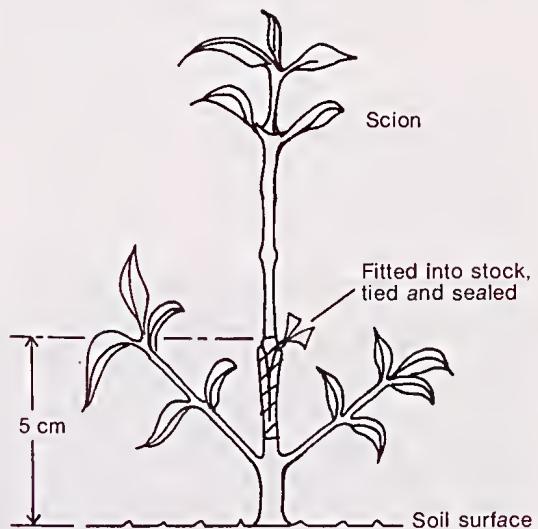


Figure 3

The lower down the stock the graft is placed, the less chance there is of the *Westringia* stock shooting away. All the same, it is still necessary to check the stock for the first few years and cut back any shoots.

Once the graft is established the leaves on the stock can be completely removed; at this stage the graft can be unwrapped. All grafts at Canberra Botanic Gardens are done in a glasshouse with problem species covered by plastic bags to raise humidity.

The Gardens has most of the common *Prostanthera* spp. established as grafts and work now is concentrated on the less common species.

Grafted specimens of the following species are established:

<i>P. aspalathoides</i>	<i>P. incana</i>
<i>behriana</i>	<i>incisa</i>
<i>caerulea</i>	<i>lasianthos</i>
<i>calycina</i>	<i>latifolia</i>
<i>cuneata</i>	<i>leichhardtii</i>
<i>denticulata</i>	<i>linearis</i>
<i>discolor</i>	<i>magnifica</i>
<i>eurybiodies</i>	<i>marifolia</i>
<i>euphrasiooides</i>	<i>megacalyx</i>
<i>hirtula</i>	<i>mellissifolia</i>



Westringia fruticosa: Westringia — after J.P. Westring, an 18th century Swedish physician; *fruticosa* — shrubby or bushy

P. microphylla
nivea
ovalifolia
phylicifolia
rhombea
rotundifolia
rugosa

P. saxicola
sieberi
striatiflora
spinosa
teretifolia
walteri

For many difficult-to-propagate species grafting may provide the only means of propagating and thus preserving them. The survival rate of the grafted plants is more than twice that of comparable non-grafted plants.

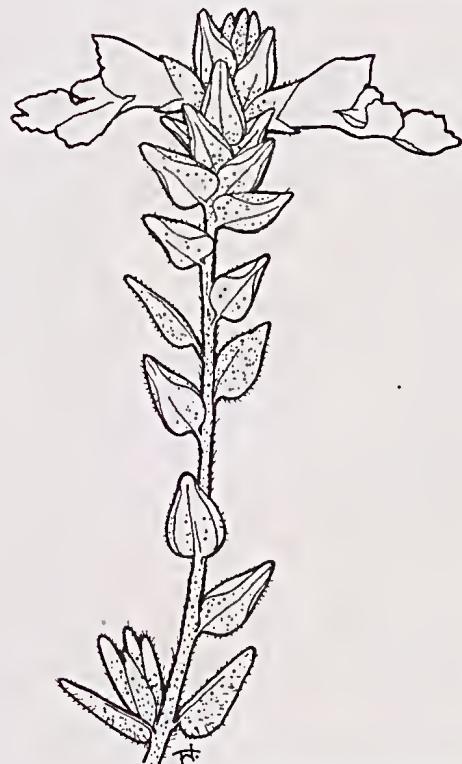
However, there are difficulties with the work. The *Westringia* grows so vigorously that it can push off the scion or callous too quickly. This problem is alleviated to some degree if the stock and scion are both growing vigorously in the glasshouse before grafting. The follow-up to grafting can be time-consuming with weekly checks and weekly stock pruning essential.

The success with *Prostanthera* has led to the examination of other difficult-to-propagate genera. Some initial work has been done on *Myrtaceae* using *Kunzea ambigua* as a stock; *Rutaceae* using *Eriostemon* and *citrus*; Western Banksias on to Eastern Banksias and so on.

There is still much experimental work to be done with other genera but it appears that after five years of trials, the grafting of *Prostanthera* on to *Westringia fruticosa* is indeed successful. It is strongly recommended that both amateurs and nurserymen adopt this practice as standard when producing *Prostanthera* plants.

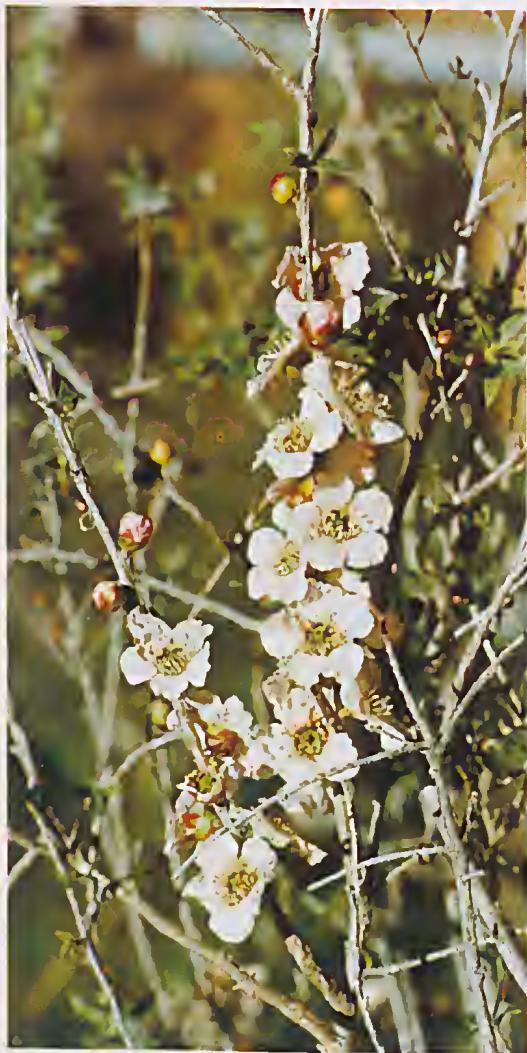


Prostanthera aspalathoides



Prostanthera marifolia

LEPTOSPERMUM SQUARROSUM



Leptospermum squarrosum is an upright shrub, varying in height from 1-3 m and is native to sandstone areas of the coast and adjacent plateaus of NSW and Queensland.

It has proved to be an extremely hardy shrub, tolerant of both well-drained and damp conditions, and is thus recommended for new gardens or exposed positions. It makes an excellent informal hedge or windbreak and is salt resistant.

Leaves are stiff, triangular and sharply pointed, being held alternatively and at right angles to the stem, hence its specific name. The flowers have five petals, mostly a delicate shade of pink, paling to white on the outer rim and base.¹ Pure white and much deeper pink forms do exist. Flowers are 16 mm in diameter (about the size of a 5c coin) and give the plant its common name of Peach Blossom tea tree. Flowering begins in autumn and persists through winter, sometimes even into spring. Its colour can therefore be appreciated when little else is flowering in the garden.

For best flowering results, *L. squarrosum* should be planted in full sun, with good drainage, and watered well during dry spells. As flowering occurs on two to three-year-old wood pruning will be at the expense of future seasons' flowers. Normally pruning will not be necessary, because of the dense habit of this species.

Propagation by tip cuttings should be done in early autumn before frost tips the new growth. Hormone treatment will assist the cutting's ability to produce roots and is strongly recommended. Powdered hormones can be readily obtained commercially.

Propagation by seed is described in *Growing Native Plants* Vol. 2. Select older seed capsules from low down on the stems and store in a warm place in a paper bag until the seed is released. Sow the seed in spring and prick it out when it is large enough to handle.

Pests are few but web-building caterpillars have been noted and may be controlled with Carbaryl (Sevin, Bugmaster 80).

¹RHS Colour Chart, 1966: petals, red purple group 73A paling on outer rim and towards base to red-purple group 620.

Leptospermum squarrosum:
Leptospermum — from the Greek, *lepto*, meaning slender, and *sperma*, seed; *squarrosum* — from the Latin meaning rough with scale or tips of bracts projecting outwards, usually at about 90°

CORREA REFLEXA

Correa reflexa: Correa — after José Francisco Correa de Serra (1750-1823), a Portuguese botanist who published several papers on the family Rutaceae; reflexa — from the Latin word reflexus, meaning turned or bent backwards, referring to the bracts

Correa, named after Correa de Serra, a Portuguese botanist, belong to the family Rutaceae, along with the genera *Boronia* and *Eriostemon*.

Correa reflexa is sometimes referred to as Native Fuchsia, a name it shares with *Epacris longiflora*. Its distribution ranges from south-east South Australia, through Victoria to eastern NSW and continues into a small pocket in south-east Queensland; it includes eastern Tasmania and Kangaroo Island off South Australia. The plant occurs in a variety of habitats — from mountain forests to dry mallee-scrub — which together with its geographical distribution indicates its degree of adaptability.

Correa reflexa has some twenty or so distinct forms many of which have been given varietal names, the most notable being *C. reflexa* var. *reflexa*; var. *nummularia*; var. *cardinalis*; var. *coriacea*. It has naturally hybridised with *C. alba*, *C. decumbens*, *C. aemula* and *C. pulchella*.

A variable species, *Correa reflexa* ranges from semi-prostrate to 1.2 m erect. Its habit is compact to open and it has heart-shaped to rounded or narrow, simple opposite leaves.





Hybrid between *Correa alba* and *C. reflexa*



Correa alba

The leaves vary from rough and hairy to almost smooth-surfaced above and slightly furry beneath with flat or recurved margins.

Flowers are woolly-surfaced, tubular to bell-shaped. The tips of the joined petals are turned back or reflexed, with eight slightly protruding stamens. These are usually pendulous with two or three together on short, slender terminal or axillary stalks. Flowers are yellow green to crimson red with yellow to green tips and stamens tipped with large yellow anthers.¹

Flowering time is chiefly between May and November, and intermittently throughout the year, and the plant grows well in practically any soil, in shade or full sun. To grow it at its best, a light sandy soil with good drainage and a position protected from wind, with broken or morning sunlight, is desirable. Groups of three to five offer added protection and enhance visual appeal.

A friable rich compost used as a mulch, or lightly forked into the soil around the plant's root zone, is beneficial. Otherwise, a complete fertilizer such as Gro-plus in moderate amounts in early autumn and spring, or a combination of the two, will give good results. Regular, deep watering, especially during the growing season, is essential for healthy growth and flowering.

Regular tip pruning, best done after the main flowering period in late spring, will encourage development of a well-branched, compact shrub and increase flower numbers the following season.

Soft tip cuttings taken in late summer and early autumn offer best results when propagating. These should be no more than 75 mm long with a clean, smooth basal-cut immediately below a leaf node. Rooting hormone may help the cutting establish root systems if misting and/or bottom heat is not available. Cuttings should be potted-on to individual containers as soon as they have developed from four to seven roots in the cutting mixture. Liquid fertilizer, such as Aquasol, helps at this stage.

Because it is free from pests and diseases and offers a good return of flowers, *Correa reflexa* is an excellent species and well worth growing.

¹RHS Colour Chart, 1966.

Green form — corolla, yellow-green group 154D; corolla tips, yellow-green group 144B.

Red form — corolla, varying between red group 51B and 46A; corolla tips, yellow-green group 145A.

RULINGIA HERMANNIIFOLIA

The genus *Rulingia* is a member of the family Sterculiaceae which ranges from small shrubs to large trees such as the Flame Tree (*Brachychiton acerifolium*).

The habit of *R. hermanniifolia* places it among low growing sub-shrubs and mat-forming plants that are useful in varying situations in most gardens.

In different positions in Canberra Botanic Gardens plants have formed low, dense mounds 20 cm high by 1 m wide after two years. Even when not in flower the deep green, wrinkled leaves are attractive. It is well suited for rock gardens as it follows contours and crevices, flowing gracefully over the rocks.

In spring the plant is covered with pink-tinted buds followed by small star-like flowers which are borne in cymes. The flowers open white and fade to pink with a red centre, giving an attractive contrast as the old flowers are replaced by new ones. The fruit also provides colour from late November with its deep red capsule about 4 mm in diameter.¹

Propagation is by seed or cuttings which strike readily. (See *Growing Native Plants* Vol. 2, p. 27, for the method of raising plants by cuttings.) Half-hardened wood taken in December or January offers the best results although soft tip cuttings may be used. Commercial hormone powders also aid in the quicker strike of cuttings.

Rulingia hermanniifolia is frost hardy in Canberra but enjoys full sun as its growth is sparser in a situation of heavy shade. It occurs naturally in the Sydney sandstone regions and along the coast where its habitat coincides with that of the Rock Wallaby. Its foliage is often damaged by regular cropping by this animal.

¹RHS Colour Chart, 1966: red group 56D.

Rulingia hermanniifolia: *Rulingia* — after J. Ph. Ruling, a botanist of Gottingen; *hermanniifolia* — with leaves like a hermannia



EUCALYPTUS MANNIFERA subsp. MACULOSA



Eucalyptus mannifera subsp. *maculosa*, commonly known as Brittle Gum, is a well-proportioned, sometimes multi-stemmed tree growing to a height of 10-20 m and attaining a spread of 13 m with a trunk diameter of 30-60 cm.

Its main attraction is its smooth white trunk, often mottled with patches of grey, which changes to a pink colour in late spring or summer. These colours are particularly pronounced when the trunk is wet after summer rains. The leaves are narrow and dull green, about 12 cm in length. The flowers are white and in Canberra are seen in autumn although in other places flowerings have been recorded at different times of the year.

As the common name implies, the wood is very brittle and large. Trees have been known to drop branches occasionally and care should be taken when planting this species near dwellings. However, its graceful form and branching habit do make it an excellent shade or specimen tree.

It occurs naturally on the Central and Southern Tablelands of NSW, commonly growing among *E. macrorrhyncha* and *E. rosii*. It forms an important component of the natural landscape at Canberra Botanic Gardens.

Eucalyptus mannifera subsp. *maculosa* is frost hardy and tolerant of drought conditions, growing in rainfall areas of 500-1000 mm per annum where dry summer conditions are often experienced.

In the Gardens it grows well in poor soils often containing large amounts of clay, or in shallow, rocky soils.

Propagation is by seed which germinate readily and little difficulty should be found in establishing this species.

The attractive appearance of well-grown specimens, together with the tree's ability to withstand moderate drought and tolerate poor soils, make it a very useful tree for the home garden or street plantings.

Eucalyptus mannifera subsp. *maculosa*: *Eucalyptus* — a Greek compound from eu, well, and calyptos or kalyptos, veiled or covered, alluding to the calyx and/or petals which form a lid over the flower bud; *mannifera* — manna yielding, alluding to the white powdery material on the bark; *maculosa* — from the Latin, meaning thickly spotted or blotched

DAMPIERA DIVERSIFOLIA

Dampiera diversifolia occurs in the southwest of Western Australia where with other members of the family Goodeniaceae, it forms an important part of the spring wildflower display.

It is a prostrate perennial, or undershrub, varying from 25 cm to 1 m in diameter. The short, dense, leafy branches produce a compact ground cover which is surmounted in the spring and summer by a crown of small purple-blue flowers.¹ This depth of colour is rarely surpassed by any other blue flowering species of plant.

The flower differs from all other *Dampiera* and is held on short axillary peduncles or branchlets, with one or two leaves and a pair of bracteoles per flower. The radical leaves vary from oblong-spathulate to oblanceolate rarely above 2.5 cm in length. The other leaves vary from lanceolate to linear but are rarely longer than 1 cm. The appearance of the second set of leaves often resembles that of an Epacrid (a member of the family Epacridaceae).

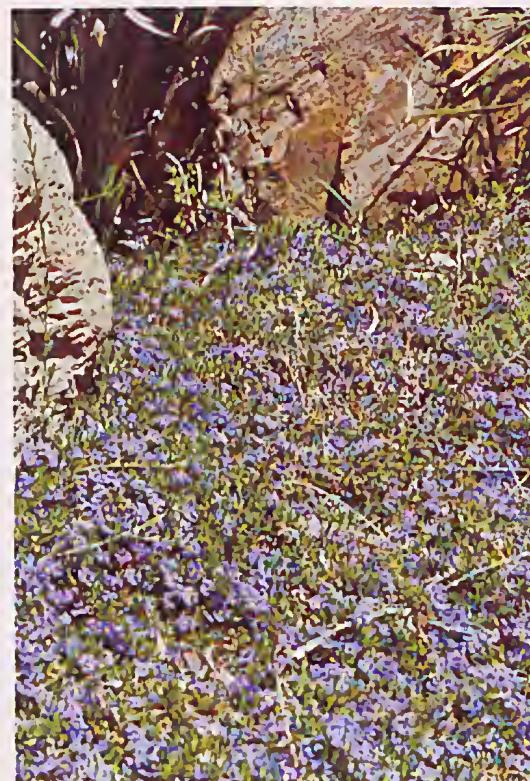
Propagation is normally from cuttings, producing excellent results in the late spring, summer and early autumn. For a description of methods used in propagation refer to *Growing Native Plants* Vol. 2.

This species of *Dampiera* is quite hardy in the Canberra district, resisting frosts successfully for a number of years. Although it survives in a wide range of conditions it does prefer a well-drained site with some protection from winds and the invasion of more vigorous species.

When grown from cuttings it may need time to establish itself successfully, normally about twelve months. Then it usually spreads quite rapidly until reaching its maximum size.

Dampiera diversifolia suckers readily in good friable soil and this aids its hardiness.

A general fertilizer in spring and autumn prevents any tendency for it to die back in the centre.



Dampiera diversifolia: *Dampiera* – after William Dampier (1652-1715), a buccaneer who collected some Australian plants which are still preserved in the British Museum at Oxford; *diversifolia* – with leaves of more than one kind

¹RHS Colour Chart, 1966: corolla, violet-blue group 95A.

HOWITTIA TRILOCULARIS

Howittia trilocularis, a monotypic genus, is native to the moist, well-drained gullies of coastal NSW and Victoria, where it has been known to reach a height of 3 m.

It is similar to the genus *Hibiscus*, differing only in the presence of a three-lobed stigma and three-celled seed capsule, as well as having a smaller flower 25 mm in diameter.

The flowers, ranging in colour from lavender through to violet and deep mauve, are

Howittia trilocularis: *Howittia* — named after Dr Godfrey Howitt (fl. 1855), a Melbourne physician interested in botany; *trilocularis* — three-celled, referring to the seed



borne on long woolly stems emerging from the leaf axils.¹

The actual flower is held alone on a woolly peduncle about 3-4 cm in length. It has five petals and a prominent protruding stigma. The flowering period in Canberra extends from late spring through summer and the seed capsules which follow mature and open from December to February.

The interesting leaf form ranges from ovate cordate to broadly lanceolate depending on growing conditions. Lobed leaves may be found although the lanceolate form is predominant. The dark green upper surface of the leaves, indented by the obvious venation, makes a welcome change and is another of its notable features. On the under surface can be found brownish wool which usually extends along the petiole from the mid-rib and on to the stem itself.

Ease of propagation by seed or cutting is another reason why this delicate blooming shrub should be present in a large number of home gardens.

Seed can be sown in a light sandy soil with about one-third peat moss or other suitable friable material. This allows some moisture to be held in the mix as well as the sand, allowing excess moisture to drain away.

Germination should be in about five weeks and the seedlings can be pricked out into a similar soil mix containing a little extra humus when about 5 cm in height. Leave until a good root system has developed before planting out.

Cuttings should be taken in either late spring or autumn with best results coming from new tip growths about 10 cm long. A hormone powder will stimulate rooting but it is not necessary.

In about three months roots will have developed and the seedlings can be removed from the cutting mixture (sand/perlite/peat moss) into pots of a similar soil mixture to the seedling requirements. One method is to put the cuttings into a punnet of cutting mixture with a jar or plastic bag over the punnet to contain a higher humidity zone around the cuttings.

The site is important when planting out although *H. trilocularis* will stand a wide range of areas. Best areas are those which are well-drained and partly shaded. It will grow in full sun and when exposed to frosts, but tends to become hardened in appearance and foliage becomes more sparse. Roots should be kept cool by selecting a site beside a building or mulching the selected area.

¹RHS Colour Chart, 1966: petals, purple-violet group 80B paling on outside to 80C.

THRYPTOMENE SAXICOLA

Thryptomene saxicola is a member of a purely Australian genus of thirty-five or forty species spread throughout all States of Australia, including Tasmania, although *T. saxicola* itself is confined to the Stirling and Eyre districts of south-western Western Australia. It grows among granite outcrops in these districts hence its common name Rock Thryptomene.

Probably it is the best known of the Australian *Thryptomene* spp., as it has been sold for many years in nurseries as Paynes Thryptomene or *Thryptomene 'Paynei'*. These are misnomers and refer only to selected forms of *T. saxicola*.

The species is usually an erect shrub, 1 m high, but may often have rather pendulous

Thryptomene saxicola: *Thryptomene* — from the Greek meaning diminished, perhaps because of its small stature; *saxicola* — rock loving

branches. The prolific pink-hued flowers are axillary and are borne along the upper short lateral branches.¹ Leaves are 5-10 mm long and obovate with a characteristic Myrtaceae smell when crushed.

It can be used for cut flowers as severe pruning has no detrimental effect to its vigour or shape. Pruned well, it will generally flower more profusely in the second year and its potential for cut flowers is excellent.

Like most *Thryptomene* spp., *T. saxicola* is spring flowering, but carries some flowers most of the year.

Propagation is usually by cuttings as seed has proved to be unreliable. Tip cuttings, taken in spring and placed on a propagation bench with bottom heat, give best results. Hormone rooting powder used before placing the cuttings on the bench greatly enhances the percentage strike. Under these conditions rooting usually takes four to eight weeks. Cuttings taken in spring should be advanced enough for autumn planting.

The site should be well-drained with some frost protection, although only the hardest frost affects this species.

A fertilizer, such as 10-9-8 in spring and autumn, will be beneficial, especially if the plant is pruned hard for cut flowers. Under these conditions, *T. saxicola* has proved to be a reliable plant with a marked resistance to *Phytophthora cinnamomi*.

Canberra Botanic Gardens has several specimens and no pests or diseases have yet been noted.

¹RHS Colour Chart 1966; corolla, red-purple group 65B.



MELALEUCA FULGENS

Melaleuca fulgens, also known as the Scarlet Honey Myrtle, is a compact shrub with a round shape and slender branches. It occurs naturally in rocky granite areas of south Western Australia and has been successfully cultivated in the eastern States where it is particularly suited to coastal situations.

Always striking for its soft grey-green foliage, it is irresistible when in bloom with yellow-tipped spikes of brush-like carmine flowers deep within the bush.¹ In Canberra the flowers are seen from October through to early winter.



The leaves are narrow, 2-3 cm long, and both leaves and branches give an aromatic fragrance when bruised. Birds — particularly honeyeaters searching for nectar — are attracted to the shrub when it is in flower.

In Canberra young plants need protection from low winter temperatures. Mature bushes are moderately frost hardy but tender tips and young flower buds can still be burned by sudden frosts, particularly when also hit by early morning sun. Some form of frost protection — certainly for young plants — should thus be considered. A suitable cover for a young plant is a hessian-covered wire frame which can be easily removed. It is prudent to protect bushes from winds in the south-west quarter.

At Canberra Botanic Gardens the best specimens are eight years old and are 1.5 m tall and 1.7 m wide. These came from seed sown in November and group-planted in neutral to slightly acid soil of sandy texture in open sun positions. Others planted beside existing shrubs grew to about 2.7 m in height but have a rangy, coarse appearance. Those planted in areas of filtered light are small and spindly with dull foliage.

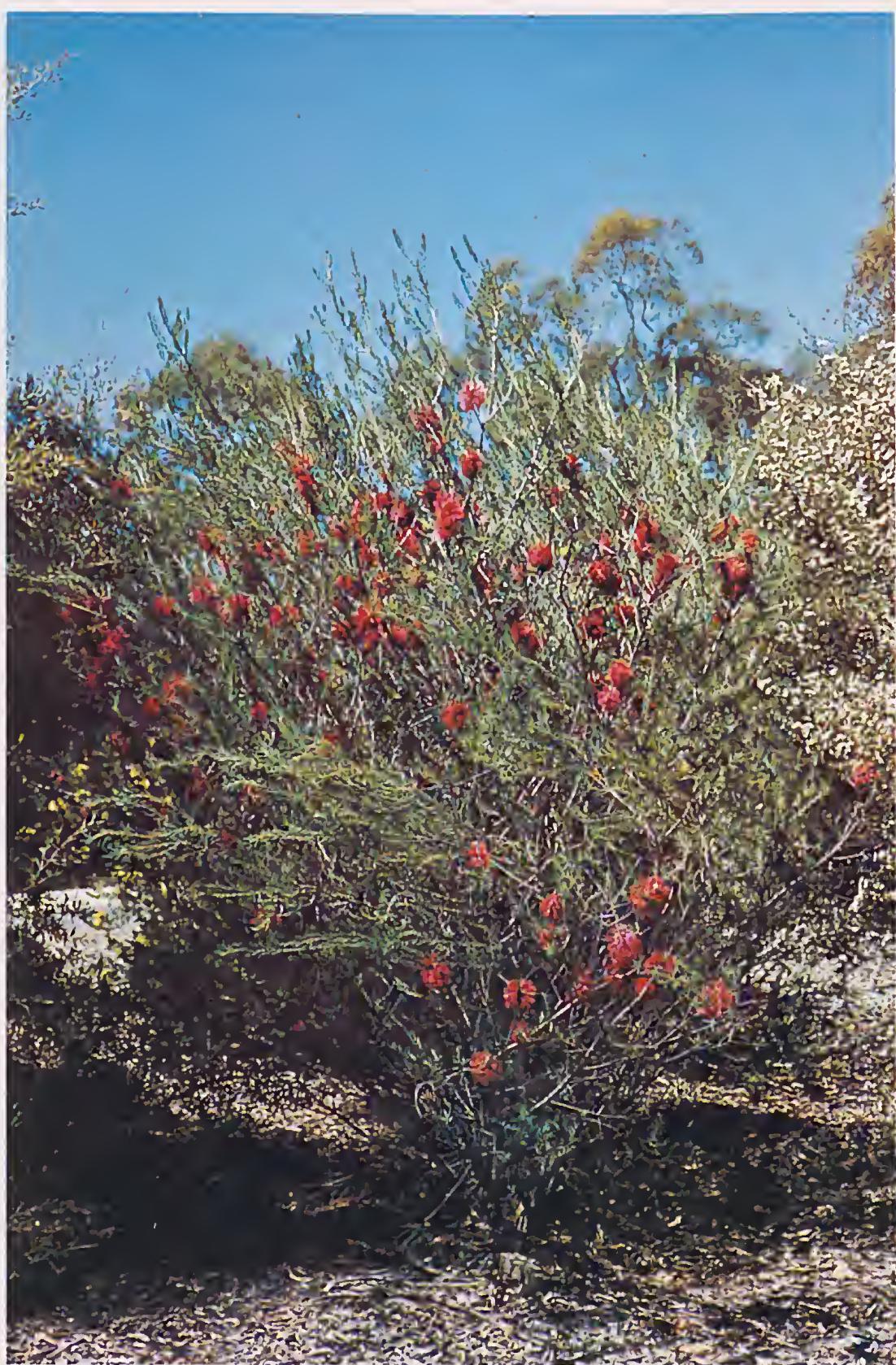
Woody seed capsules which follow flowering provide plenty of propagation material. Propagation by soft tip cuttings is also practicable although Canberra Botanic Gardens finds the seed method more rewarding. Generally this species can be bought only at nurseries specialising in Australian native plants.

Melaleuca fulgens likes plenty of water and does not resent constantly damp positions. Nevertheless, good drainage should be encouraged as water-logged soil invites root rot diseases.

Pruning is not necessary, other than after flowering to control a desired shape. The shrub is generally free from pests but will benefit from periodic applications of a complete fertilizer.

¹RHS Colour Chart, 1966: stamens, red group 52A; anthers, yellow group 8A.

Melaleuca fulgens: *Melaleuca* — from two Greek words, *melas*, black, and *leukos*, white, because the first *Melaleuca* described had white branches against a black trunk possibly blackened by fire (another opinion contrasts the white bark with the very dark foliage of some species); *fulgens* — bright, possibly referring to the bright carmine flower spikes



CALOSTEMMA PURPUREUM

Calostemma purpureum, commonly known as the Garland Lily, belongs to the Amaryllidaceae, a large family well recognised in horticulture for such exotic plants as the Daffodil, Belladonna Lily and Nerines.

The family is not well represented in Australia and *Calostemma* is the only wholly endemic genus.

C. purpureum is the most common member of the genus and occurs in western NSW, north-western Victoria and in South Australia. It is well-known plant of the Riverina district, on both flood plains and rocky ridges.

It has been grown in Canberra Botanic Gardens for many years and has performed well, flowering each summer between January and March. As with the exotic Nerines, *Calostemma* often flowers in a leafless state, the narrow, shining-green, strap-like leaves usually preceding flowering and reaching a length of 25-30 cm.

Blooms are borne in an umbel of six to eighteen flowers on a leafless stem, 20-50 cm high. Flower colour is a purplish red with a tube sometimes paler and the anthers yellow.¹ Each trumpet-shaped flower is held on a long, thin pedicel and is about 2 cm long.

The plant makes an ideal rockery subject, taking up very little space but extending its flowering stem high enough to become obvious. It may also be used in tight rows in more formal situations as the Nerines are often used.

Propagation is simple as the capsules often begin to shoot in storage before sowing. The mechanism is complex and will not be described here.

No pests have been noted.



Calostemma purpureum: *Calostemma* — from the Greek, *kalos*, beautiful, and *stemma*, crown; *purpureum* — from the Latin, purple

RHS Colour Chart, 1966: corolla tube, red-purple group 70B paling to red-purple group 70D at base; corona, yellow-white group 158D at maturity; anthers, yellow group 12B.

MYOPORUM FLORIBUNDUM

Myoporum floribundum is a spectacular member of the genus *Myoporum* extending from China, Japan, Mauritius and New Zealand to Australia where it is distributed throughout the continent. There are about thirty species in the genus and of these sixteen are found in Australia. They range from ground covers to small, bushy trees.

Myoporum floribundum occurs naturally on the coastal ranges of southern NSW and Victoria, rising up to gullies of the upper Snowy River and parts of the Southern Tablelands. But nowhere is it particularly common.

A slender, fragrant shrub to 2.5 m high, it is adaptable to a wide range of soil types and also to different levels of soil moisture, though it performs better with good drainage.

The shrub has long, arching branches with pendulous, narrow sticky leaves 8 to 9 cm long and provides a desirable appearance in a garden even when not in flower. The leaves are simple and alternate on the branches.

The many plants at Canberra Botanic Gardens are performing well. Some in very exposed positions receive full sunlight for most of the day and in winter heavy frosts, some down to about -8°C. These grow satisfactorily, although they have a tendency toward a small canopy of leaves at the top of the shrub with bare branches below. Others, about 6 m away, are in semi-shade for much of the day and are protected overhead by large *Eucalyptus* trees. These are bushy with foliage to ground level and have no tendency towards legginess. So a semi-shaded, well-drained position would be the most satisfactory one for this species.

Some pruning can be carried out, although only to correct straying branches or branches causing an obstruction.

Biggest factor in favour of the species is its delightful appearance during the flowering season from September to November. The flowers, which are small, have five nearly equally lobed petals and are on fine hair-like

pedicels (stalks) giving a feathery appearance to the massed inflorescences. They are found in the axils of the leaves along the upper parts of the branches and vary in colour from white to cream.¹ In full flower the shrub appears to be covered with snow, the branches arching under the weight. Flowers are followed in November and December by a succulent fruit which falls to the ground when ripe.

Propagation of *Myoporum* from seed is difficult, as it is with other members of the Myoporaceae family. Cuttings, however, strike readily and 100% success is not unusual. Cuttings can be taken at any time of the year with best results in spring and summer. They should be about 8-12 cm long and either soft tip cuttings or semi-hardwood cuttings.

The species is hardy to frost and no serious pests have been noted in Canberra Botanic Gardens. *Myoporum floribundum* is not yet widely planted but deserves a place in any garden.

¹RHS Colour Chart, 1966: 155D white group.

Myoporum floribundum: *Myoporum* — from the Greek, myo, to shut, and poros, pore, alluding to its ability to exist in dry areas; *floribundum* — from the Latin, meaning abundance of flowers



BANKSIA SPINULOSA

Banksia spinulosa, sometimes known as Hairpin Banksia, is native to the three eastern States of Australia, extending along the coast from Victoria to Cairns and distributed from the coastline into forest areas of the Great Dividing Range. In coastal areas of NSW it tends towards a dwarfed habit but further in the mountains it is taller and more upright.

B. spinulosa varies greatly in height (1-3 m) and flower colour, with variations of brown, red, orange and gold.¹ The flower spikes range from 10-20 cm in length. The individual flowers open from the top of the spike and provide a long flowering period from autumn through the winter to spring when the three stages of cone development can be observed

Banksia spinulosa: Banksia — commemorates Sir Joseph Banks, the botanist who travelled with Captain Cook; *spinulosa* — with small spines, probably refers to the leaf tips of the plant originally described

— bud, flower spike and seed capsule. Leaves are long and narrow, 3-8 cm long by 2-7 mm wide, and variably toothed.

Open growing produces a compact symmetrical shrub but dense shade or heavy plant competition can result in open spindly growth.

Pruning is mostly unnecessary if the plant is not in a confined position. It should form a rounded shrub about 2 m diameter in open sun.

B. spinulosa grows well in soils ranging from light through to moderately heavy with good moisture and drainage. Soils with high lime content lead to yellowing foliage and poor growth. Canberra winter frosts do not impede its growth and forms from southern sources can be regarded as frost hardy.

It is easily propagated from seed which can be sown all year round under glass. Germination occurs two to five weeks after sowing. The seed remains viable for several years. Propagation from cuttings taken in late spring is used to retain specific color forms. Specimens grown from seed take two to three years before flowering and from five to six years to attain their full height.

Banksia spinulosa is an easy plant for the home gardener to cultivate. It has an attractive habit and many showy flower spikes. It is also a good food source for bees and nectar-feeding birds and provides fine cut flowers. Few pests have been observed.

This species now includes *Banksia collina*.

¹RHS Colour Chart, 1966: perianth, orange group 26A; style, yellow group 13A.



ANIGOZANTHOS 'PINK JOEY'

Much experimental work is being carried out with *Anigozanthos* species in the development of new cultivars. The Australian Cultivar Registration Authority, now based at Canberra Botanic Gardens, plans to publish information about new cultivars in future articles in *Growing Native Plants*.

Anigozanthos 'Pink Joey' is a newly-registered cultivar and is a selected form of *A. flavidus* which is normally the largest and most robust of the Kangaroo Paws. The distribution of *A. flavidus* (Albany Kangaroo Paw) is confined to the far south-west corner of Western Australia where it occurs on damp, peaty soils.

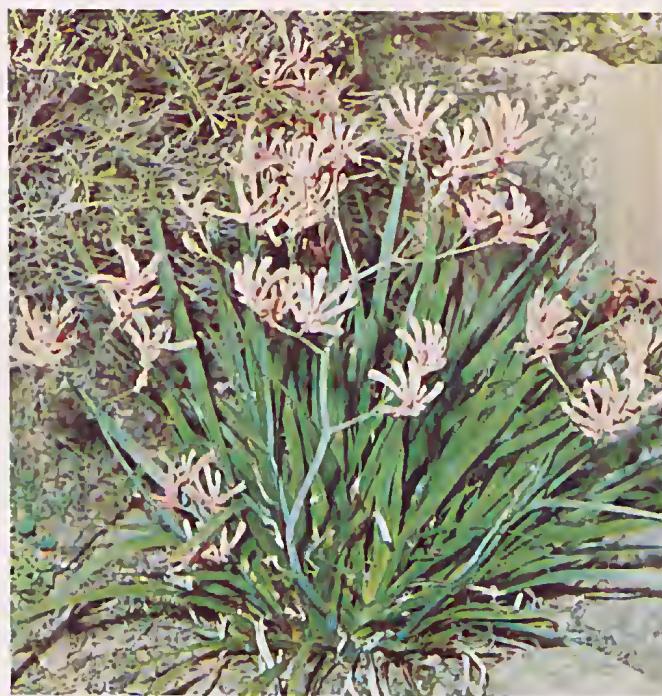
Of the family Haemodoraceae, all eight species of the genus *Anigozanthos* are strikingly unusual. The flowers are large and woolly with a long, curving perianth tube. Thick matted hairs cover the flowers and stalks and the young buds really look like a kangaroo's paws.

The exact origin of *Anigozanthos* 'Pink Joey' is obscure. The specimen presented for registration was raised from a batch of seedlings from the West Australian Wildflower Society, presented to Canberra Botanic Gardens in November 1973. These matured and flowered well in the 1974-75 summer. It differs from other forms of this species with its small stature, about 50 cm, instead of the usual 2 m or so of the more common forms of *A. flavidus*.

Another feature is the flower colour of smoky pink instead of the usual burgundy or green tonings.¹ The much-branched panicle is about 20 cm long and many flowered.

The clusters of long strap-shaped leaves are less prone to black blotching, commonly known as ink disease, to which most species are susceptible. Although there is no definite cure for this, correct plant nutrition and maintenance helps to develop resistance.

In cultivation this species is easily increased by root division in spring or autumn. Soil mixture should be made porous by



Anigozanthos 'Pink Joey':
Anigozanthos — from two Greek words, *anoigo*, to expand, and *anthos*, flower, alluding to the open branching of the flower stems; however this meaning is a little obscure

adding a mixture of compost-enriched sand to the existing soil.

Plants prefer full sunlight but will grow in partial shade. Although hardy to both frost and drought, they need plenty of water in the growing season but should be kept somewhat dry during the dormant winter season.

Dead leaves should be pruned in winter when some browning off occurs. Plants should not be overcrowded or clumps allowed to become overlarge. They respond to a well-balanced fertilizer (NPK and trace elements) in early spring.

Apart from the aesthetic appeal of this cultivar it has potential as a garden specimen because it adapts to dry or damp situations and would suit a rock garden, a border or pool surroundings.²

¹RHS Colour Chart, 1966: pedicel and perianth tube, greyed purple 186A; inner perianth, yellow-green 144A-B; stamens, yellow-orange 22C.

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Successive volumes of *Growing Native Plants* will each have a combined index covering all volumes in the series to and including the new issue. The index printed here covers Volumes 1 to 7.

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Articles, drawings and photographs for *Growing Native Plants* are supplied by trained horticultural staff at Canberra Botanic Gardens.

Colour references As in previous volumes colours are identified for the benefit of overseas readers according to both the 1941 and 1966 editions of the colour charts of the Royal Horticultural Society, London.

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Front cover:
Prostanthera saxicola var. *montana*

Back cover:
Dampiera diversifolia

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